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Economic
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Profile and Performance of the Alberta Manufacturing Sector 1990

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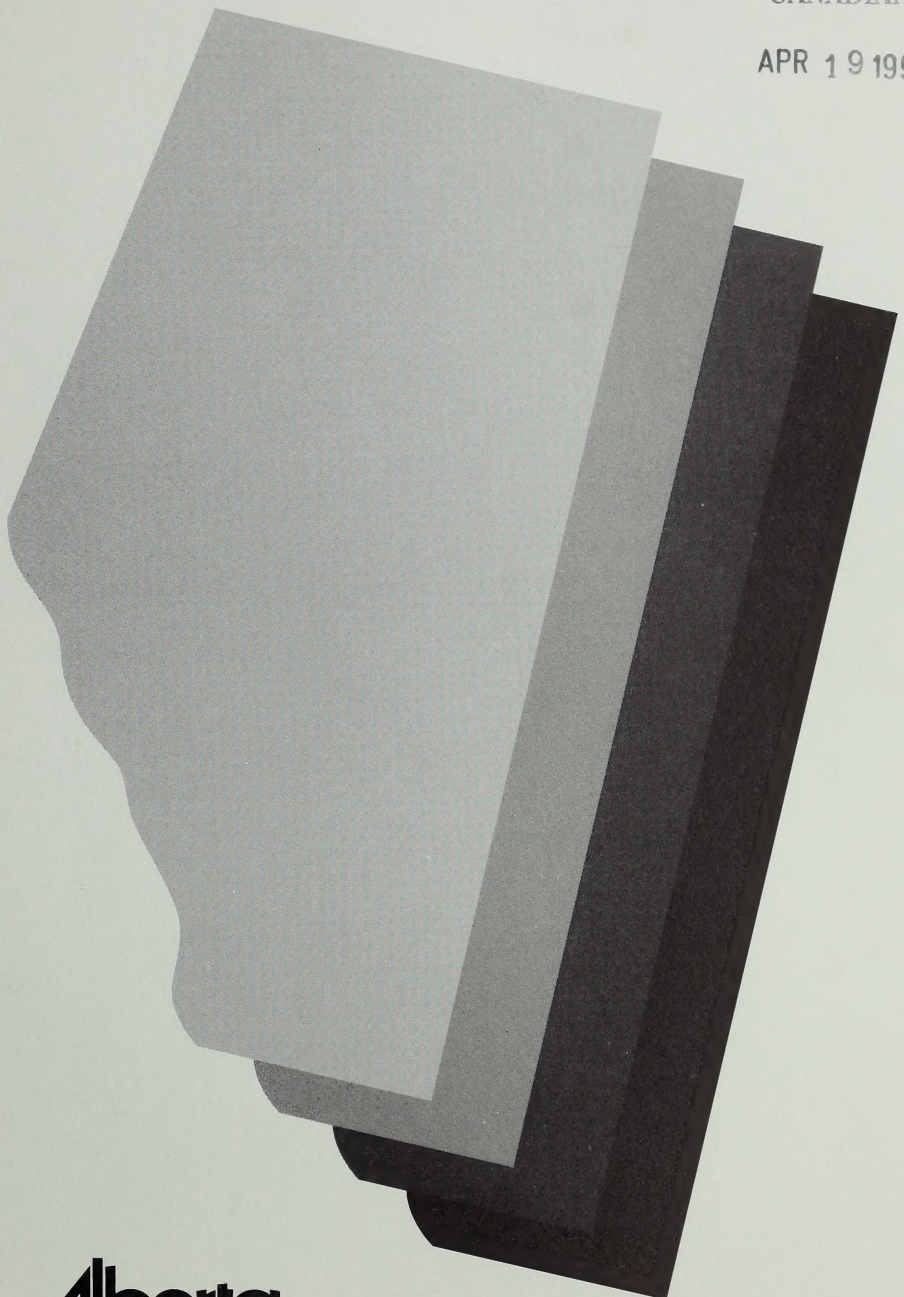

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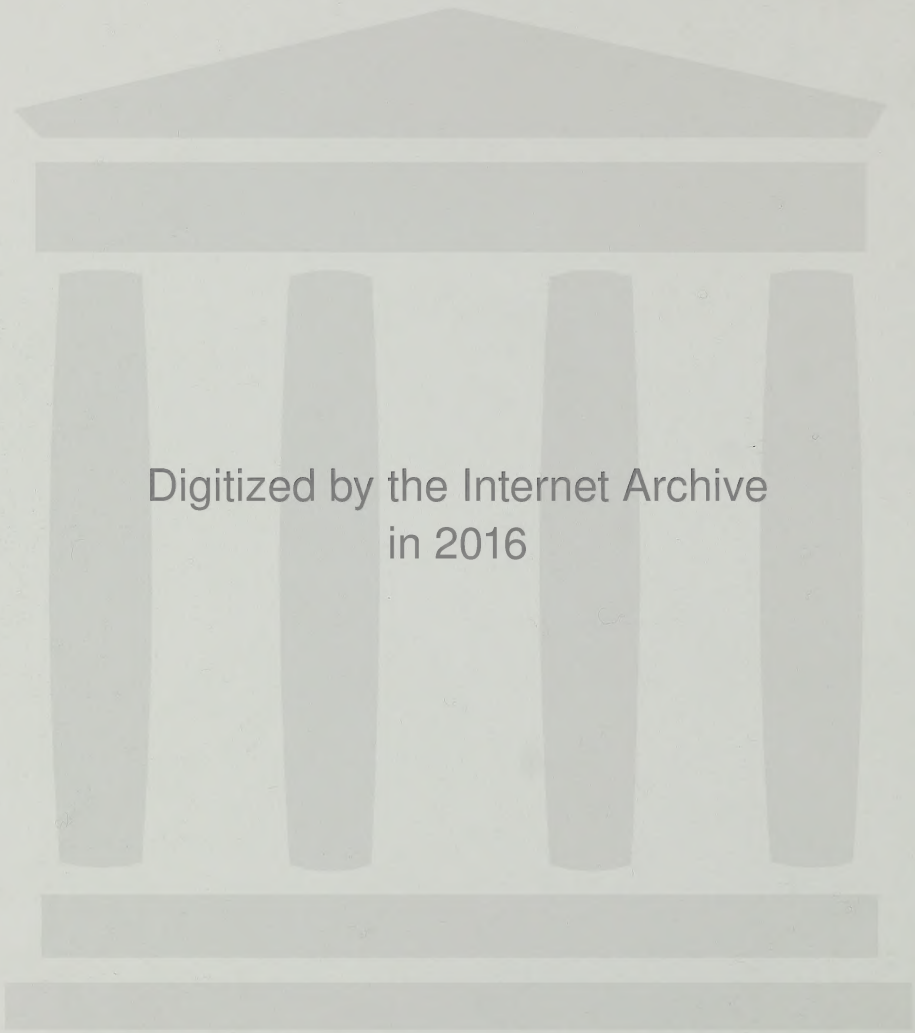
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Profile and Performance of Alberta's Manufacturing Sector – 1990

Alberta
ECONOMIC DEVELOPMENT
AND TRADE

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Profile and Overview

The Alberta Manufacturing Sector

Profile and Overview

As the Alberta economy expands and diversifies, manufacturing continues to play a significant role in development and growth. Over the last decade, substantial progress has been achieved in diversifying the types of goods produced, entering more domestic and international markets in which the products are sold, and balancing the growth of manufacturing opportunities throughout the province. All of these developments have lessened Alberta's dependence on the sale of unprocessed resources and vulnerability to changes in world commodity markets.

Over the past two decades, Alberta has developed an extensive infrastructure and expertise in the areas of food processing, forest products, petrochemicals, and plastic products. While many of these industries initially produced primary derivatives, much of the recent growth has been based on higher value-added processing of natural resources through application of advanced technologies.

Alberta's industrial product manufacturers, such as the fabricated metal and machinery industries, oil and gasfield equipment industries, and construction material manufacturers, have also grown in importance along with the resource based industries, the principal market for their products.

In addition to these manufacturing industries, Alberta firms are emerging in the fields of electronics, telecommunications, aerospace, and a wide range of consumer products.

Figure 1

Alberta Manufacturing Sector

	1987	1988	1989	1990 (Estimate)
Employment[1] (Thousands)	85	95	97	100
Value of Shipments[2] ($ Million)	16,424	17,920	18,613	19,445
Exports[3] ($ Million)	3,174	4,118	3,880	4,200
Investment[4] ($ Million)	1,043	1,561	2,081	2,182

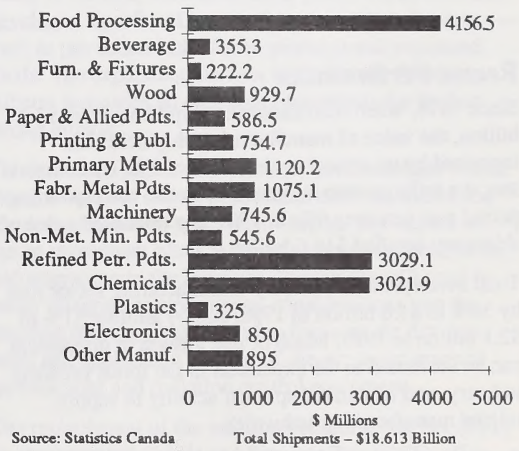
1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Forecast
4. Source: Statistics Canada, Private and Public Investment

In 1989, the manufacturing sector employed an average of 97,000 workers (compared to about 56,000 in the energy sector), and the total value of shipments amounted to $18.6 billion.

As a result of a relatively small domestic market, the Alberta manufacturing sector is highly export oriented. In 1989, international exports amounted to approximately $3.9 billion or about 20% of the total value of shipments. While the United States remains Alberta's main foreign market, accounting for 58% of Alberta's manufactured exports, shipments to the Pacific Rim region have been growing rapidly, and in 1989, comprised just over 22% of the Province's exports of manufactured products.

Figure 2

The Value of Alberta Manufacturing Shipments, by Industry, 1989



Source: Statistics Canada

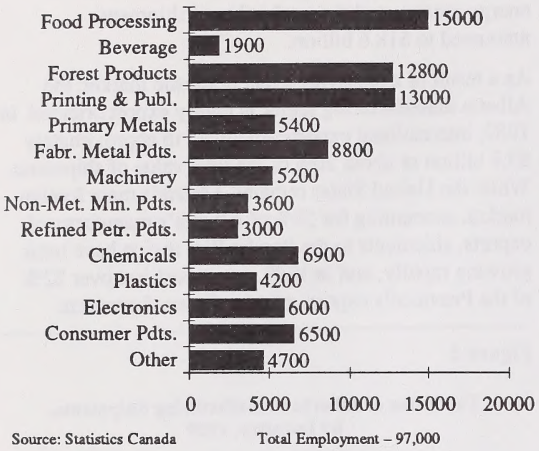
Total Shipments – $18.613 Billion

Investment activity is one of the key indicators of growth and investor confidence in the economy. Alberta has been highly successful in attracting new investment to further upgrade its resources and to develop new product lines. Major new capital expenditures are currently under way or planned in pulp and paper, petrochemicals, food processing, and primary metal industries. Together, the estimated value of major project developments in these industries is over $5.5 billion (refer to Table 1).

The manufacturing sector is one of the main contributors to the diversification in the Alberta economy. In addition to the direct job opportunities created, the manufacturing sector has had a significant impact on growth in the services, construction, transportation, research and development, and other sectors of the economy.

Figure 3

Employment in the Alberta Manufacturing Sector, by Industry, 1989

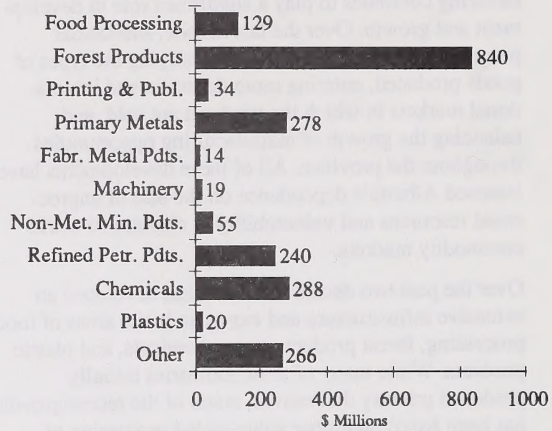


Source: Statistics Canada

Total Employment – 97,000

Figure 4

Investment in the Alberta Manufacturing Sector, by Industry, 1989



Source: Statistics Canada

Total Investment – $2.1 Billion

Recent Performance

Since 1978, when manufacturing shipments were $7.4 billion, the value of manufacturing shipments has increased by an annual average rate of 9%. By comparison, the inflation rate in Alberta over the corresponding period was just over 6%. In 1989, the estimated value of shipments totalled $18.6 billion.

Total investment in Alberta's manufacturing sector rose by 50% to $1.6 billion in 1988, and by another 31% to $2.1 billion in 1989. Much of this growth in investment can be attributed to the expansion in the forest products industry, and associated spin-off activity in supply related manufacturing industries.

Over the past decade, the value added as a percentage of total value of shipments in the manufacturing industries has also steadily increased, reflecting the growing number of higher value-added intermediate products, and finished end products.

The fastest growing industries in the manufacturing sector have been the chemical and chemical products industries, forest products, industrial metal and machinery products, and electronics and telecommunications equipment. Other industries such as plastic products, printing and publishing, plus fashionwear, and consumer products have also grown in importance. While food processing continues to be the largest manufacturing industry in Alberta, the rapid growth in these other industries has helped to develop a much more diverse manufacturing base.

With the development of new products and markets, the manufacturing sector has lessened its dependence on the energy industry, and has become much less vulnerable to fluctuations in crude oil prices and investment activity in the energy sector.

The continued success and growth of the **food processing** industry in recent years has been largely based on its ability to adapt to changing trends in lifestyle and to the growing demand for new gourmet and specialty products. In 1989, the total value of shipments in the industry amounted to $4.2 billion, and exceeded the value of primary agriculture production.

Over the past decade, a world-scale **petrochemical** industry has developed in Alberta. With over $6 billion invested in facilities since the mid-1970s, Alberta has an extensive infrastructure and the industry has made a substantial contribution to the diversification of the Alberta economy. In 1989, shipments were valued at approximately $3 billion — making it Alberta's second

largest manufacturing industry. Also, new investment activity in the downstream plastics processing industry has resulted in a much more diverse range of **plastic products** manufactured in Alberta.

The **forest products** industry is another major success story in Alberta's diversification strategy. More than 13,000 people are now directly employed in the forest products industry, and annual shipments were estimated at about $1.7 billion in 1989. The industry has introduced technologically advanced products with rapidly growing international demand such as oriented strandboard, medium density fibreboard, and chemi-thermo mechanical pulp which utilize Alberta's abundant supplies of aspen hardwoods.

In the **metals and machinery sector**, Alberta has developed a highly innovative and competitive oil and gasfield equipment industry. In recent years, the industry has developed large export markets in the United States, and more than thirty other countries around the world.

Over the last decade, advanced manufacturing materials have emerged as a new area of growth in the manufacturing sector. The **electronic products** industry has developed strengths in telecommunications, instrumentation, and process control systems. The industry's largest segment, the telecommunications equipment industry, produces internationally competitive equipment sold throughout markets in the United States, Europe, and the Pacific Rim.

Other areas of advanced manufacturing that have been developing in Alberta include: transportation and aerospace equipment, pharmaceuticals and medical products, and advanced composite materials such as nickel and cobalt alloys.

Factors Affecting Future Growth and Development

The growing interdependence of countries in the trade of goods and services, the accelerating pace of technological innovation, and the increase in international competition will all have important implications for Alberta's manufacturing sector.

The Canada/United States Free Trade Agreement is now in place and will result in the elimination of all bilateral tariffs between the two countries by 1998. The Agreement will also reduce or eliminate a wide range of non-tariff barriers to trade for both goods and services. Clearly, the benefits which are realized will largely depend on how well individual companies adjust to increased competition and how successfully they take advantage of the new opportunities.

Progress is also being made towards the reduction of interprovincial trade barriers within Canada.

The above factors will all lead to greater export opportunities for Alberta business, but also will result in increased competition. Alberta firms will have to place greater emphasis on technological innovation to reduce costs and to develop new products and processes. Although price competitiveness will remain important, quality and reliability will increasingly determine the level of success in the international marketplace.

Given the relatively small domestic market in Western Canada, increased exports will be essential for the continued growth and development of Alberta's manufacturing sector.

The longer term growth in demand for intermediate manufactured products by newly industrialized countries such as Korea and Taiwan, and the developing countries such as China, Thailand, and Indonesia is forecast to be in excess of the overall growth rates for these economies. Many of Alberta's manufacturing producers have already developed significant access to these markets in areas such as petrochemicals, forest products and processed foods. The expanding markets in the Pacific Rim give Alberta industries an excellent opportunity for further strong growth.

The increased public awareness of environmental issues, along with more stringent environmental standards and regulatory approval process in Alberta, will impact on future investment plans related to resource development and upgrading in the Province. Businesses will need to better integrate environmental considerations into the decision making process, and to focus on the development and application of state-of-the-art environmental technologies and pollution control equipment.

The replacement of the existing Federal Sales Tax (FST) by the proposed Goods and Services Tax (GST), effective January 1, 1991, should have a positive impact on Alberta's manufacturing sector. Export oriented firms in particular, will benefit from the implementation of the GST. Manufacturers currently subject to the 13.5% FST (9% for construction materials) will be subject to the lower tax rate of 7% under GST. Also, the hidden tax on input costs (e.g., those purchases of manufactured products subject to the FST) will be removed as businesses will be able to claim tax credits on *all* inputs.

While the implementation of the GST in 1991 should benefit the manufacturing sector as a whole, not all manufacturers will be better off.

- Under the existing FST, a number of manufactured products are tax-exempt, including: oil country

tubular goods — pipe, tubing, casing, fittings, drill pipe; construction and excavation equipment, including drilling rigs; most transportation equipment; agriculture implements; gasoline and diesel fuel; clothing and most processed food and beverages. Manufacturers of these products will not benefit from the implementation of the GST, and in fact will be worse off where their products are sold to an end consumer.

- The 7% GST rate will apply at all stages of production and distribution to the retail level versus the manufacturer's plant gate for the current FST; therefore, depending on the level of distribution costs and retail markup, the 7% GST may increase the consumer price of a product by more than the existing FST. Most of the benefit of the GST will go to manufacturers of "big ticket" consumer items such as automobiles, appliances, audio-video equipment, etc.

Mid-term Investment and Growth Prospects

The performance of the Alberta manufacturing sector will continue to respond to changes in the world economic climate, and to global supply/demand balances in specific industries. However, with well developed infrastructure, an increasingly diversified product base, and rapidly growing access to a large number of markets, Alberta's manufacturing sector is now less vulnerable to cyclical swings in world commodity prices.

Over the past decade, the Alberta manufacturing sector has become one of the leading forces contributing to the growth and stability of the Alberta economy. In the future, strong growth will continue to take place in Alberta in the highly capital intensive manufacturing industries.

Alberta has been highly successful in attracting new investment to further upgrade our resources and to develop new product lines.

The forest products industry, which has become one of Alberta's success stories, has attracted more than $3.5 billion worth of new investment (including projects recently completed, underway, or proposed). Roughly 4,000 direct jobs will be created in the industry, in addition to thousands of construction jobs from this investment.

A new round of investment activity in the petrochemical industry will substantially increase Alberta's production capacity by the mid-1990s. Construction is scheduled to begin on Dow Chemical's $800 million hydrocarbons project in Fort Saskatchewan. Related downstream derivative production facilities include the $425 million ethylene glycol plant proposed by Union Carbide.

Petro-Canada and Neste Oy have begun construction of a $300 million methyl tertiary butyl ether (MTBE) plant in Strathcona County near Edmonton. This project will use Alberta field butane and methanol as a feedstock for MTBE production.

Major new investment is also taking place in Alberta's specialty chemical industry to supply the pulp and paper industry. Construction has begun on Dupont Canada's $120 million hydrogen peroxide plant at Gibbons, plus three sodium chlorate plants, valued at more than $150 million.

Over and above these capital intensive projects, significant new investment is taking place in Alberta's electronics, telecommunications, plastics, aerospace, and other advanced manufacturing industries.

The rise in investment spending in Alberta, over the last few years, clearly indicates investors view Alberta as one of the best places to invest in Canada. This high level of capital investment will in turn lead to new investment in supply related industries, and stronger growth in manufacturing output.

Table 1

Major Development Projects in the Alberta Manufacturing Sector [1]

Owner	Project Description	Project Cost	Location	Construction Schedule
Food Processing				
Canada Malting Co.	Malting Facility Expansion	$ 22 Million	Calgary	1991
Westcan Malting	Grain Processing Plant	$ 50 Million	Alix	1990-91
TOTAL Food Processing Projects		**$ 72 Million**		
Forestry				
Alberta Energy Company	BCTM Pulp Mill	$168 Million	Slave Lake	1989-90 Startup Early 1991
Alberta Newsprint Company	Chemi-Thermo Mechanical Pulp & Newsprint Mill	$360 Million	Whitecourt	Startup August 1990
Alberta Pacific Forest Industries	Bleached Kraft Pulp & Paper Mill	$1.3 Billion	Athabasca Area	Proposed 1991-96
Consumers Paper Corporation	Paper Recycling Plant & Tissue Mill	$ 30 Million	Redcliff	1990-91
Daishowa Canada	Bleached Kraft Softwood Pulp Mill	$550 Million	Peace River	Startup July 1990
Northern Forest Industries	Specialty Sawmill	$ 16 Million	Lac La Biche	1990-91
Procter and Gamble	Bleached Kraft Pulp Mill Expansion	$365 Million	Grande Prairie	1992-94
Procter and Gamble	Wood Processing Facility	$ 35 Million	Manning	1991
Weldwood of Canada	Pulp Mill Expansion	$370 Million	Hinton	Completed
Weldwood of Canada	Sawmill	$50+ Million	Hinton	1991+
TOTAL Forestry Projects		**$3.244 Billion**		

Continued on following page

Table 1

Major Development Projects in the Alberta Manufacturing Sector, continued

Owner	Project Description	Project Cost	Location	Construction Schedule
Chemicals and Chemical Products				
Albchem Industries	Sodium Chlorate Plant	$ 45 Million	Bruderheim	1990-91
Albright & Wilson Americas	Sodium Chlorate Plant	$ 50 Million	Grande Prairie	1990-91
Canadian Occidental Petroleum Ltd	Sodium Chlorate Plant	$ 60 Million	Bruderheim	1990-91
Dow Chemical	Hydro-Carbon Project	$800 Million	Fort Saskatchewan	1989-94
Dupont Canada	Hydrogen Peroxide Plant	$120 Million	Gibbons	1989-91
Novacor Chemicals	Second Pelletizer	$ 35 Million	Joffre	1990-92
Neste Oy/Petro Canada	MTBE Facility	$300 Million	Strathcona Area	1990-92
Union Carbide	Ethylene Glycol Expansion	$425 Million	Prentiss	1990-94
TOTAL Chemical Projects		**$1,835 Million**		
Metals				
Mag Can	Magnesium Plant Phases 1 – 3	$370 Million	Aldersyde	Phase I ($105 M) - Completed Phases II & III - Proposed
TOTAL All Projects		**$5,521 Million**		

1. Based on Public Information Available as of August 1990

Alberta's Food Processing Industry

Alberta's Food Processing Industry

Industry Profile

Alberta's food processing industry consists of meat packing plants, dairy operations, flour mills, vegetable packers/processors, feed mills, canola processors, bakeries, sugar refineries, and a variety of other specialty products and packaged food processors.

The food processing industry is the largest manufacturing industry in Alberta, with shipments valued at $4.2 billion in 1989. This represents approximately 23% of the province's total manufacturing shipments. Alberta also accounts for over 40% of the food processing shipments in Western Canada.

The Alberta food products industry is comprised of approximately 315 firms located throughout the province, in small communities as well as large cities. Establishments in the food processing industry can be categorized according to stages in development, or varying needs as follows.

- Entrepreneurial firms which tend to be small, relatively young, and owner-managed, although there is a growing "medium" size sector emerging in this category. Most often their products are niche-market oriented (i.e. specialty products, ethnic foods, and gourmet items).
- Structured or semi-regulated firms which are typically supply-controlled by marketing boards. Dairy and poultry operations are prime examples. While these firms may have plants and operations in other provinces, their sales are usually concentrated within Alberta.
- There are also a few corporate processors which have market interests that extend throughout Canada as well as the international arena. These firms are much larger than the average Alberta firm but medium-sized compared to firms in North America as a whole.

The single largest contributor to the food processing industry is the meat packing and processing sector. Sales from this sector represent almost 50% of total Alberta food processing sales.

The meat packing and processing sector consists of two major segments: the slaughtering and primary meat cutting facilities, and further processing which includes curing, smoking and preserving of meat.

Sales of Alberta beef and beef by-products comprise about 40% of the total Canadian sales. Alberta is also one of the top pork product manufacturers in Canada. Methods of raising hogs, and a grading system rewarding leanness, have contributed to the reputation of high quality and uniformity of supply associated with Alberta pork.

Other major sectors of the Alberta food processing industry include: feed mills, canola processors, poultry operations, and miscellaneous food processors.

Food processors have two basic markets for their products: the retail trade industry, and the food service industry which includes hotels, restaurants, and institutions.

International exports amounted to about $452 million, or 11% of the total value of shipments in the Alberta food processing industry in 1989. Major exports included:

• beef	$ 96 Million
• dehydrated alfalfa	$ 50 Million
• oilseed cake and meal	$ 49 Million
• wheat malt	$ 48 Million
• canola oil	$ 43 Million
• horsemeat	$ 36 Million
• pork	$ 34 Million
• processed fruit and vegetables	$ 15 Million

The United States remains the largest export market for Alberta's processed foods purchasing close to 40% of the province's exports. The Pacific Rim is also fast becoming an important foreign market for Alberta's food products.

Current Economic Indicators

Food Processing Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	13,000	15,000	15,000	15,000
Value of Shipments[2] ($ Million)	3,894	4,172	4,157	4,320
Exports[3] ($ Million)	420	497	452	500
Investment[4] (Food and Beverage Industries Combined) ($ Million)	106	111	129	132
Capacity Utilization[5] (Percent)	80	85	80	80

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

Over the last decade, Alberta's food processing industry has continued to expand and diversify its product base. There has been a proliferation of new products and new product categories. These changes reflect, in large part, the transition in consumer tastes away from the typical high volume products to specialized, deli-type products. The global emphasis on health awareness and the increasing consumer demand for low cholesterol, preservative-free products has played a major role in this transition.

In 1989, as a result of global oversupply of several food products such as canola oil, the value of Alberta food product shipments declined by .4% to $4.157 billion. Exports declined by 9% to $452 million, primarily as a result of reduced canola oil, oilseed cake and pork exports. These reduced exports were generally due to an oversupply and lower prices for these products in Alberta's export markets.

In the meat processing industry, the value of beef shipments increased slightly to about $1 billion in 1989. Beef exports rose by 70% to $96 million, primarily due to increased sales to the U.S. and increased market penetration in the Pacific Rim, particularly Japan and Korea. Average pork prices continued to be depressed in 1989 as the value of pork shipments remained at approximately the same level as in 1988.

Over the past few years, significant investment has occurred in the **meat packing industry**, highlighted by a new plant built by Cargill, and expansions by Lakeside Packers and Centennial Packers. The industry has also undergone considerable rationalization in recent years, making it more competitive, and placing the industry in a good position to capture new markets.

The **dairy sector** has continued to expand production at a relatively stable pace in recent years. Several new rural facilities have started up in the last three years and injected new interest in the industry. As with the case in other sectors of the food processing industry, the emphasis in the dairy sector has focussed on developing new product lines such as specialty cheeses and low fat products.

There has been a rationalization within the dairy industry over the past year. A large plant owned by one major dairy was sold to a provincial dairy co-op with the balance of the company being acquired by a large Canadian dairy with operations now in four provinces.

Canola oil now dominates the Canadian **vegetable oil** market, and has become Alberta's third most widely grown non-forage crop. Alberta producers also harvest about 50% of the canola grown in Canada.

There are four canola crushing plants in Alberta. Two of them also refine crude oil and manufacture canola oil products such as margarine, shortening, salad oil, shortening oil, and margarine oil for the retail and food service industries. In recent years, emphasis in the canola oil industry has been focussed on the production and marketing of the value added, packaged products.

In 1989, the world vegetable oil market was highly competitive, resulting in a significant decline in the value of canola oil exports. However, despite the vulnerability to short term market influences, Alberta canola oil and canola oil product manufacturers are currently in a position to begin to reduce their reliance on volatile international markets. The increasing emphasis on the positive health aspects of canola oil has created an opportunity for the Alberta producers to increase their market shares, both in Canada and in the United States, where the demand for canola oil is growing rapidly.

Grocery product manufacturers have made gains, especially in the bakery area, with the development of new facilities, product lines, and more aggressive marketing. The adoption of modified atmosphere packaging has led to a much wider distribution for bakery products and sandwiches.

A certain degree of rationalization has occurred in this sector through takeovers by large national companies. This has not only enlarged existing distribution routes but has injected extra capital for developmental initiatives and plant expansions. For example, as a result of improved scale efficiencies, the large bakeries are now providing only a few bread items and are contracting out specialty items such as specialty buns, English muffins and pastries. This has given the local, smaller processors an opportunity to fill these market niches and supply specialty products at lower costs.

The **pasta sector** has been experiencing rapid growth over the past few years. Total sales from the pasta industry were estimated to be close to $20 million in 1988. The most rapidly growing area is the fresh pasta segment. Consumer perception of a "fresher" product has played a major role in increasing sales and it is anticipated that growth in this segment will continue over the next few years.

Factors Affecting Future Growth and Development

Alberta's food processing industry is now very much a part of the North American, as well as global food industry. Even processors whose product sales are limited to the Alberta market are influenced by global factors. Currently, there is overcapacity in food production and processing in Canada, North America, and

Europe. This situation is not likely to reverse in the near future as new capacity is coming on stream in developing countries like Brazil, India, and in South East Asia.

The food processing industry is a highly competitive industry and Alberta firms face a number of challenges, including: a myriad of competitive products in the marketplace, constantly changing consumer tastes, and increasing power of the retail environment. There is a continuing need for capital to improve productivity and product quality, and increase new product research and development. The recent installation of ultrafiltration equipment by one of Alberta's major dairy firms, for example, will lead to the development of both new products and more efficient manufacturing of traditional products.

Marketing in the food processing industry will become increasingly important. Effective marketing is an absolute requirement to position a product among its competitors to create consumer trial, to support retail interests, and to generate sales.

The value of the Canadian dollar, agricultural subsidies by foreign governments, and the Canada/United States Free Trade Agreement, are all external factors that will have an impact on the future growth of the food processing industry in Alberta.

The general impact of the Free Trade Agreement on the food processing industry is expected to be positive with long-term market opportunities in the United States being exploited by several Alberta companies. Both tariff and non- tariff barrier elimination will make Alberta products more competitive in the Pacific Northwest states. Although the removal of the Western Grain Transportation Act (WGTA) payments on agricultural goods sold to the United States may have short-term negative implications for some segments of the sector, such as canola crushers, these products should also benefit over the long-term from the removal of tariffs and non-tariff barriers.

While Alberta's food processing industry has locational advantages with respect to serving Western Canadian markets as well as Western United States markets, transportation costs will continue to have a major impact on the competitiveness of Alberta food processors in export markets. However, the pressure of transportation costs is offset somewhat by the presence of a relatively efficient transportation infrastructure.

Mid-Term Investment and Growth Prospects

Most of the Alberta food product industry's subsectors have made gains in recent years in developing and adapting new production processes, and marketing new product lines. The industry continues to face extremely competitive marketplace, especially in the United States, but many subsectors are now in a good position to capture new market shares and expand existing ones.

New plants such as the proposed $50 million Westcan Malting barley malting facility, will help to improve the efficiency of the food processing industry and create new markets for Alberta's primary producers.

New consumer trends, brought about by changing demographics and lifestyle, are clearly emerging and will continue to offer immediate opportunities for the Alberta food processor. Growth is occurring, and is expected to continue in niche markets, such as microwaveable foods, frozen novelties, and upscale gourmet, fresh, organic, and ethnic products.

The increasing popularity of Alberta products in places like Hong Kong and Japan gives clear evidence of the growing potential for food exports. There is also a growing demand for Alberta food products in other Pacific Rim countries.

The grocery and food service market which includes hotels, restaurants, and institutions, represents a significant growth opportunity for Alberta products with the rapidly expanding tourism industry in the Province.

Alberta's Beverage Industry

Alberta's Beverage Industry

Industry Profile

The Alberta beverage industry consists of four major segments: the brewing industry, distilling industry, wine industry, plus soft drinks and other non-alcoholic beverage industries.

Together, these industries employ approximately 1,900 people in Alberta. The total value of shipments in 1989 amounted to $355 million.

In recent years, the change in consumer tastes away from the traditional alcoholic beverages toward lighter drinks such as coolers, juices and sodas, have had a significant impact on the structure of the Alberta beverage industry.

Brewing Industry

The Alberta brewing industry consists of three main components:

- national breweries — Labatt's and Molson;
- regional (micro-breweries) — Drummond Brewing Co.; and
- cottage breweries and brew pubs which produce non-pasteurized specialty products (Big Rock Brewery and Strathcona Brewery Co.).

As a result of a merger between Molson and Carling O'Keefe, and the subsequent rationalization of their operations, the Molson brewery in Lethbridge was closed at the beginning of 1990. Currently, Molson has the two largest plants in Alberta, in Edmonton and Calgary, and has approximately 65% of the Alberta domestic beer market.

The Alberta beer industry produces a variety of beer and malt products in bottles, cans and draught for the consumer market and hospitality industry. Beer is categorized as premium, regular or discount brands, each with a different price range. Key determinants of market success are brand loyalty, product image, and price.

In recent years, with the change in consumer tastes away from the traditional beers, the cottage breweries and brew pubs, producing specialized non-pasturized products, have grown in number and in popularity in Alberta. These specialty breweries are also making inroads into the United States market. While the consumption of traditional beers has declined, the sales of cottage breweries have experienced rapid growth in recent years.

The Alberta brewing industry employs approximately 650 people and accounts for just under one-third of the total value of shipments in the beverage industry.

The Canadian brewing industry is structured to comply with provincial legislation and regulations, which require breweries to maintain provincial production facilities in order to sell their products in that province. The result is a highly fragmented Canadian market with relatively small capacity plants in each province. Industry productivity is considerably lower compared to the United States because of the small scale plants.

Distilling Industry

The Alberta distilling industry consists of three companies: Alberta Distillers, Palliser Distillers, and Highwood Distillers. In total, the distillers employ over 150 people. Product lines include whiskey, rum, vodka and gin.

The two larger distilleries are cost competitive in both the Canadian and the United States markets. The Canadian whiskeys have a worldwide reputation for quality. In 1989, Alberta exports of whiskey amounted to over $16 million. Most of Alberta whiskey production is exported to the United States, with small amounts sold in Western Europe and Japan.

Alberta distillers are capturing increasing shares of the new market demand, created by changing consumer tastes, by introducing new varieties of spirit coolers. The sales of Alberta coolers, typically made of rum or vodka mixed with juices, have grown rapidly in recent years.

Wineries

The Alberta wine industry currently consists of four wineries. Andre Wines is the major producer, while Andrew Wolf Wine Cellars, Lewis Brothers Winery and Cartier Wines are smaller, specialty producers.

The wineries produce a wide variety of table wines, sparkling wines and coolers. The companies are relatively small scale operations, and together employ less than 100 people. Small volumes of some specialty wines are gaining acceptance on the export market.

Since the shift away from the consumption of alcohol-containing beverages began in Canada in the early '70s, wine has been the only segment of the alcohol beverage industry to experience an increase in per capita consumption. At the same time, the trend has been away from high alcohol, sweet wines, to lower alcohol, table wines. In response to the changing consumer tastes, the Alberta wine industry has also responded to changing consumer tastes by successfully marketing new lines of wine coolers.

Preferential listing, packaging, and distribution practices under the Alberta Liquor Control Board (ALCB) have assisted in the development of the wine industry in

Alberta. However, these preferences were removed in 1988 as a result of the Free Trade Agreement (FTA).

Soft Drinks — Non-Alcoholic Beverages

As a result of the shift in consumer tastes away from the traditional, alcoholic beverages towards more health oriented drinks, the soft drink segment of the industry has become one of the most dynamic and fastest growing segments of the industry.

The soft-drink segment includes the major soft drink companies (Coca-Cola, Canada Dry), the local soft drink companies such as HPI Beverages and Sun Mountain Bottling, and manufacturers of juice and juice/sparkling water drinks such as McCains, Nu-Maid, Empress Foods and J.B. Food Industries.

As a result of the changing consumer demand, the local soft drink companies have largely switched away from the so-called "cash and carry" sales to bottling of soft drinks and carbonated water. Several companies are also aggressively marketing their own new products such as natural, additive-free drinks, and combinations of juices and carbonated water.

Several of the local bottling firms have had success in the bottling and marketing of still and carbonated spring water for the domestic and export market. There is a growing trend of consumer acceptance for these products in North America and the the more developed economies of Pacific Asia. Local firms have had some limited success in the Pacific Asia market, but have experienced the most growth domestically. Exports to the United States are continuing to grow.

Current Economic Indicators

Beverage Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	2,000	2,000	1,900	1,800
Value of Shipments[2] ($ Million)	375	385	355	345
Exports[3] ($ Million)	25	21	20	20
Investment[4] ($ Million)	-	-	-	-
Capacity Utilization[5] (Percent)	60	60	60	60

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

In recent years, the changing demographic structure and consumer tastes have significantly altered the market structure of the beverage industry. The Alberta industry has had to respond to these changes by developing new product lines, and expanding market shares in the areas of newer, specialized products.

With the shift in consumer tastes away from the alcoholic beverages, the revenues in the traditional segments of the brewing and distilling industries have declined in recent years. At the same time, new areas such as specialty beers, and wine and vodka coolers, have experienced rapid growth.

The overall value of shipments in the industry has fluctuated in recent years, with the changes in economic climate and consumer demand. In 1989, the value of shipments actually declined by 8% to $355 million, primarily due to lower sales of alcoholic beverages.

Factors Affecting Future Growth and Development

The main challenges facing the Alberta beverage industry in the future will be:

- to continue to develop and market attractive new products in order to offset the declining image associated with the traditional alcoholic beverages;
- to reduce interprovincial trade barriers in the alcoholic beverage industry such as provincial listing, pricing and distribution practices; and
- to continue to improve product quality and increase productivity to meet the challenges of increased competition as interprovincial and international trade barriers are reduced.

For the Alberta **brewing** industry, the main challenge will continue to be to increase its competitiveness with the United States products, to reduce interprovincial barriers, and increase productivity by continuing to make inroads into the United States market with the new, specialty, non-pasteurized and "dry" beers.

The major factors affecting the competitiveness of **wine** production are access to competitively priced wine grapes, the ability to anticipate changes in consumer demand, and the perception of product quality.

The wine industry has traditionally processed imported grape concentrate to produce wine. The recent changes in Alberta Liquor Control Board regulations now allow processors to bring in finished wine that is then bottled in Alberta. The Free Trade Agreement will improve access of the Alberta producers to the cheaper United States wine.

Under the FTA and the Canada/European Community Agreement on trade in alcoholic beverages, the ALCB can not discriminate against foreign wines or spirits through listing, distribution, or pricing policies. Tariffs on most alcoholic beverages between Canada and the United States will be eliminated over ten years, and market access for wines and spirits will be expanded.

As a result of the changes under these agreements, Alberta wineries will be faced with increased competition from imports. Alberta distilleries will benefit from the removal of United States tariffs as most of the product is already exported to the United States.

The interprovincial trade negotiations on beer, and the recent United States objections to the provincial liquor board practices, are expected to result in changes to the Alberta Liquor Control Board regulatory practices regarding beer. These changes will likely result in increased competition for the Alberta beer industry, increase the competition in the Canadian beer market, and will put pressure on the Alberta producers to continue to increase productivity and further improve the effectiveness of their marketing efforts.

Mid-Term Investment and Growth Prospects

With the switch in consumer tastes towards more health oriented products, strong growth is expected to continue to take place in the future in the Alberta production of new lines of specialty products.

In the brewing industry, the area of fastest growth will be the non-pasteurized beers produced by small, cottage breweries and beer pubs. In the traditional beer sector, the most rapid growth in demand will take place in the area of new products such as new varieties of the increasingly more popular "dry" beer. In the distillery and wine sectors, the cooler segment is expected to continue to experience strong growth.

With the industry currently adapting to the changes in consumer demand, and operating at less than full capacity, no major new investment is expected in the next two to three years.

Alberta's Metals and Machinery Industry

Alberta's Metals and Machinery Industry

Industry Profile

The metals and machinery sector in Alberta consists of three major industry groups — primary metals, fabricated metal products, and machinery industries.

In 1989, the total value of the metals and machinery products shipments amounted to approximately $2.9 billion or about 16% of the total value of Alberta manufacturing shipments. The sector employed about 19,400 workers or approximately 20% of the Alberta manufacturing workforce.

Each industry group represents an additional stage of value added production, ranging from initial metal smelting, refining, and extrusion to more sophisticated metal fabrication, and machinery production. Within each industry segment there is also a diverse group of firms which differ in size, technology, and types of markets they serve.

The oil and gas industry is the major purchaser of Alberta metals and machinery production. Rigs, drill casing and drill pipe, pipelines, fabricated metal products, and the auxiliary equipment such as desilters, desanders, agitators and degassers, are just some of the products used in petroleum exploration, development, production and distribution.

Other major markets for metal and machinery manufacturers include the forest products, agriculture, and construction industries.

A number of Alberta firms in the fabricated metal and machinery sector have also been successful in developing leading-edge technologies in the rapidly growing environmental products market, particularly in the areas of waste management, air and water pollution control, hazardous waste processing and recycling.

Primary Metal Industries

The primary metal industry includes establishments such as iron and steel mills, steel pipe and tube mills, iron foundries, plus primary manufacturers of non-ferrous metals (e.g., nickel, cobalt, magnesium).

In 1989, the value of primary metal shipments amounted to about $1.1 billion, or 6% of the total value of manufacturing shipments in Alberta. The industry comprises about thirty to thirty-five firms employing approximately 5,400 workers.

The primary steel industry is dominated by three large, highly vertically integrated companies operating a total of seven plants in Alberta: Stelco Inc., Ipsco Inc., and its recently acquired subsidiary Western Canadian Steel Ltd.; and Prudential Steel Inc. Stelco and IPSCO each operate a steel mill producing steel from recycled steel scrap, as well as pipe and tube mills and fabricating facilities. Activity in this industry is closely tied to new investment in oil and gas industry, and commercial/industry construction activity.

Products produced by the primary steel industry include pipes and oil well casing and tubing, and structural steel bars and channels used in the construction industry and a variety of steel products such as squares, spring flats, angles, and others used mainly in the oil and gas and construction industry and in the production of various types of machinery and metal fabricated products.

With respect to primary non-ferrous metal manufacturers, Sherritt Gordon Ltd. represents one of two smelters/refiners in Alberta. The company manufactures nickel and cobalt products using ores supplied from mines in Canada, and imported from abroad. Based on Sherritt's 1989 Annual Report, last year the company produced approximately 47 million pounds of nickel valued at about $330 million, and about 1.4 million pounds of cobalt, valued at approximately $14 million. These sales accounted for 31% of total shipments of primary metal products. A large proportion of Sherritt Gordon's production is exported, to the United States and other countries around the world.

Sherritt's metals refining unit treats nickel and cobalt materials, and the rolling mill and coinage unit manufactures coinage materials including coinage strip, coinage blanks and coins, and markets these products worldwide. In recent years, Sherritt Gordon has been successful in developing unique coinage materials such as Auerate-Nickel used for the Canadian dollar coin and Nickel-Bonded-Steel (N-B-S), now being sold to a number of countries. Sherritt has also been an innovator in the development of advanced nickel and cobalt alloys for industrial applications.

A second non-ferrous smelting facility — MagCan (Magnesium Company of Canada) — recently started up production on Phase I of the three phase smelting facility that will produce magnesium for export to markets in the United States, Japan, and Western Europe.

Fabricated Metal Products

The fabricated metal products industry represents the second stage of metal utilization involving more specialized, higher value-added, and generally more labour intensive production. It is comprised of a diverse group of about 400 plants employing a total of approximately 9,000 workers. In 1989, total value of this industry's

shipments amounted to about $1,075 million or about 6% of Alberta's manufacturing shipments.

While metal fabricators manufacture a diverse range of products, the oil and gas industry represents the largest market. A large proportion of firms in the industry produce such products as pipe fittings, valves, metal tanks, and pressure vessels, and other fabricated metal products used in oil and gas exploration and production.

In 1989, the value of shipments of the structural and architectural metal products amounted to about $400 million or 37% of the total value of fabricated metal products manufacturing. Firms in this segment of the industry produce mainly structural products such as pre-engineered and prefabricated metal buildings (used mainly as agricultural storages and temporary buildings at oil drilling sites), architectural products, and stamped, pressed and coated metal products such as metal doors and windows, metal siding, roofing, railings, and others.

A large number of firms in the fabricated metal products industry are machine shops which manufacture replacement parts as well as various types of related hardware and tools for oil and gas, agricultural, construction, and mining industries.

There are also a small number of successful firms manufacturing industrial and residential Heating, Ventilation and Air Conditioning (HVAC) equipment in Alberta. In recent years, the Alberta HVAC manufacturers have made inroads into the Eastern Canada and United States markets, and an increasingly larger proportion of production is shipped to markets outside of Alberta.

Machinery Industries

In 1989, the value of the Alberta machinery industry's shipments amounted to about $746 million or 4% of the total Alberta manufacturing shipments and the sector employed approximately 5,200 workers.

Oil and gasfield equipment accounts for about 75% of the sales of Alberta machinery manufacturers. Firms in this sector also produce a variety of agricultural implements and construction equipment, as well as industrial machinery and equipment used in the manufacturing and service industries.

Oil and Gasfield Equipment

The oil and gasfield equipment industry is closely tied to new investment and drilling activity in the oil and gas industry.

The oil and gasfield equipment produced in Alberta falls into three categories:

- exploration equipment (e.g., seismic drills and survey equipment);
- drilling and well service equipment (e.g., drilling rigs, augers, pulleys, blow-out preventers, drills and drill bits, rotaries, slips, etc.); and
- production equipment (e.g., wellheads, pumping jacks, separators, dehydrators, pressure monitoring systems of valves, agitators, desilters, desanders, etc.).

Oil and gas machinery exports accounted for about 10% of the value of shipments in this sector last year. Unlike the primary and fabricated metals industry, where most exports are destined to the United States, most of the oilfield equipment is shipped to the overseas markets such as the U.S.S.R., Pacific Rim countries, United Kingdom, Norway, India, and the Middle East.

Agricultural Equipment

In 1989, the value of the agricultural equipment shipments amounted to roughly $50 million or about 7% of the value of the machinery industry shipments.

There are some 125 to 135 firms in Alberta involved in the manufacture of specialized agricultural equipment and attachments, some of which are designed for dryland prairie conditions.

Some of the products in the agricultural implement industry include: tillage equipment (cultivators, plows, rod weeders, discs), fertilizer equipment (applicators, banding equipment), seeding equipment (air seeders, drills), harvesting equipment (combine attachments and accessories, bale handling equipment, moisture monitors), and others.

Construction and Mining Machinery

A number of Alberta producers manufacture a variety of replacement parts such as blades, cutting edges, and replacement teeth for bulldozers, graders, and scrapers, as well as produce lighter and specialized equipment such as compact loaders, backhoes and loader buckets.

Current Economic Indicators

Primary Metals Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	4,100	4,600	5,400	5,200
Value of Shipments[2] ($ Million)	761	1,130	1,120	950
Exports[3] ($ Million)	198	363	278	250
Investment[4] ($ Million)	44	84	194	n/a
Capacity Utilization[5] (Percent)	60	60	70	65

Fabricated Metal Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	6,800	8,000	8,800	9,200
Value of Shipments[2] ($ Million)	794	931	1,075	1,180
Exports[3] ($ Million)	15	50	28	30
Investment[4] ($ Million)	8	16	14	15
Capacity Utilization[5] (Percent)	65	70	75	75

Machinery Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	4,500	5,000	5,200	5,000
Value of Shipments[2] ($ Million)	600	796	746	750
Exports[3] ($ Million)	140	144	149	150
Investment[4] ($ Million)	14	19	19	n/a
Capacity Utilization[5] (Percent)	55	75	75	75

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

Despite the recent trend towards the diversification of products and markets in the metal and machinery industries, total output continues to be highly dependent on the level of oil and gas investment and drilling activity in Western Canada.

As a result of the downturn in oil and gas investment activity, the value of shipments of the combined three segments of the industry increased by only 3% to $2.9 billion, compared to a 33% increase in 1988.

Primary metal shipments experienced a sharp slowdown in growth in 1989, primarily due to the decline in nickel prices. In 1989, the value of Sherritt's nickel and cobalt production declined by 6% to $330 million. As a result, in 1989, the value of primary metal shipments increased by only 1% compared to the 48% increase in 1988.

With the continued growth in the industrial and institutional construction activity in 1989, strong demand continued for structural steel production and architectural metal products, as well as heating, ventilation and air conditioning equipment. As a result, the value of fabricated metal products increased by 16%, and the value of machinery shipments rose by 6%. Much of this growth came from investment in the forest products industry, which has more than offset the slowdown in oil and gas investment activity.

Factors Affecting Future Development and Growth

In response to the continuing increase in gas export sales to the United States, both TransCanada Pipelines Ltd. and Nova Corporation are undertaking major pipeline expansions. Over the next two to three years, these and other proposed pipeline projects will substantially increase the demand for large diameter pipe produced in Alberta.

Alberta has a highly competitive oil and gasfield equipment industry as is indicated by the relatively high value of exports, not only to the United States but to more than thirty other countries around the world. As companies develop more overseas contacts and become more experienced in dealing with foreign buyers, Alberta should increase its world market share of oil and gas equipment trade.

Continuing investment in the forest products industry and related infrastructure, plus new petrochemical investment and commercial building construction, will result in the increased demand for fabricated metals and machinery products over the next two to three years. In addition, the startup of the MagCan magnesium plant near High River, will result in increased shipments of primary metal products, and will provide potential opportunities for further metal upgrading and fabricating in Alberta.

The increasing participation of Alberta firms in military and aerospace opportunities will result in further development and diversification of the metal fabricating and machinery manufacturers. More than sixty firms are currently manufacturing aerospace products in Alberta.

The Free Trade Agreement is also expected to have a positive impact on the Alberta metals and machinery industry, primarily by creating a more positive trade environment and by lessening certain non-tariff barriers

that have occasionally impeded Canadian and Alberta exports of metal and machinery products.

In recent years, Alberta metals and machinery exports to the United States have been restrained by such United States measures as the Voluntary Export Restraint Agreement (not signed by Canada but putting pressure on Canadian producers to reduce exports to the United States) and "Buy America" legislation which gives preference to United States firms on government sponsored projects. The Free Trade Agreement will create a more constructive trade environment in which the Alberta metals and machinery producers will be able to compete more freely in the United States market.

Mid-Term Growth and Investment Prospects

Major pipeline capacity expansion in Alberta and Western Canada will result in the continued growth in demand for steel pipe and tube. The continued increases in gas production will also result in continued growth in the value of shipments of gas production equipment.

The demand for structural metal products is expected to continue to expand due to increased construction activity, particularly in major resource developments in forestry, petrochemicals and to a lesser extent, energy (e.g., Husky Oil Upgrader).

The first phase of the MagCan magnesium plant which came on stream in mid-1990, will be capable of producing 12,000 to 14,000 tonnes annually, with an estimated value of $40 to $50 million per year. Investment in Phases II and III is expected to proceed in 1991, which would increase production to sixty to seventy thousand tonnes per year.

The high level of investment in Alberta, related to major capital projects in the resource and manufacturing sector (currently estimated at more than $24 billion for projects proposed or under construction), will result in significant further growth opportunities in the metals and machinery industry.

This capital investment will contain a significant portion of equipment aimed at environmental enhancement and pollution abatement and control, which will help contribute to the expected double digit growth forecast for the 1990s in the environmental products sector.

Alberta's Chemicals and Chemical Products Industry

Alberta's Chemicals and Chemical Products Industry

Industry Profile

Alberta's chemical and chemical products industry has emerged as one of the Province's largest manufacturing industries. The value of shipments has grown from $755 million in 1979, to more than $3 billion in 1989. The industry employed an annual average of 6,900 workers in 1989, and exports accounted for more than half the value of total shipments.

Alberta's chemicals and chemical products industry consists of three basic product areas — petrochemicals and chemical fertilizers, industrial inorganic chemicals, and specialty chemicals.

Petrochemicals and Chemical Fertilizers

Alberta's natural gas-based petrochemical industry accounts for more than 80% of the total value of chemical production within the province. The petrochemical industry has three major segments.

1. Ethane-based industry (ethylene and ethylene derivatives).
2. Methanol and methanol derivatives.
3. Ammonia and ammonia fertilizers.

Benzene is also produced in Alberta by Shell Canada (Scotford) from synthetic crude oil, and is used internally to manufacture styrene.

A number of elements characterize Alberta's petrochemical industry.

- It is export oriented as production of petrochemicals and chemical fertilizers far exceeds domestic demand.
- Ethylene produced in Alberta is primarily used within the province to manufacture a range of derivative petrochemical products (e.g., polyethylene, ethylene glycol, vinyl acetate monomer, polyvinyl chloride, styrene, etc.). These are then largely sold in the export market, including the United States. Alberta accounts for more than half of the ethylene capacity in Canada.
- Methanol capacity in Alberta (Alberta Gas Chemicals in Medicine Hat and Celanese Canada in Edmonton) represents about three-quarters of Canada's total methanol capacity.
- Alberta's share of Canada's ammonia and solid nitrogen fertilizer capacity is approximately 75%. Alberta currently consumes about one quarter of its total ammonia production, ships another one quarter to the rest of Canada, with the balance being exported to the United States. Recent estimates also show that 40% of the upgraded products produced in Alberta (e.g., urea, ammonium metal, ammonium sulphate, etc.) were shipped to the United States and a further 7% overseas.
- There are a total of fourteen major petrochemical and chemical fertilizer producers in Alberta. With the exception of Novacor Chemicals, Cominco, Alberta Energy Company, and Sherritt Gordon, the remaining producers are typically Canadian subsidiaries of multinational corporations (e.g., Dow Chemical, ICI Canada, Union Carbide, B.F. Goodrich, Celanese Canada, etc.).

Industrial Inorganic Chemicals

The inorganic chemical industry accounts for between 10% and 15% of the total value of Alberta chemical production. These commodity chemicals are generally used directly or indirectly in industrial processes in industries such as pulp and paper, mining (including oil and gas), petroleum refining, and fertilizers.

Principal commodity chemicals produced in Alberta include carbon black, chlorine, caustic soda, hydrogen sulphide, hydrochloric acid, carbon dioxide, and sulfuric acid.

This segment of the chemical industry primarily serves the domestic market in Alberta and Western Canada, but some inorganic chemicals are sold to markets in the United States. In recent years, they have accounted for about 10% of total Alberta production. Due to the relatively high volume/low value nature of certain inorganic chemicals, transportation costs are a major factor in limiting the market area. Only a few Alberta producers are actually involved in servicing both domestic and export markets (e.g., Dow Chemical).

Organic and Specialty Chemicals

The organic and specialty chemicals is the smallest product area, accounting for approximately 3% of the total value of Alberta chemical production. Principal organic/specialty chemicals produced in Alberta include paints and varnishes, soaps and cleaning compounds, rust inhibitors, and pharmaceutical chemicals. Most of the specialty chemical companies in Alberta tend to be formulators or blenders of chemicals designed to supply specific markets in Alberta.

Current Economic Indicators

Chemical and Chemical Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	6,000	6,500	6,900	6,900
Value of Shipments[2] ($ Million)	2,742	3,115	3,020	2,870
Exports[3] ($ Million)	1,250	1,818	1,608	1,490
Investment[4] ($ Million)	330	265	288	605
Capacity Utilization[5] (Percent)	85	95	95	90

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Survey and Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

Like other commodity markets, the chemical products industry, particularly petrochemicals, is highly cyclical in nature. Following a period of oversupply in the world market for petrochemicals in the mid-1980s, the supply/demand balance in the world petrochemical industry tightened, resulting in the rise in prices and profits for the Alberta petrochemical industry beginning in 1987.

In recent years, the rapid economic growth in the newly industrialized and industrializing countries of the Pacific Rim region, such as Korea, Taiwan, China and Thailand, has resulted in a rapid increase in demand for petrochemicals in these countries. In 1989, exports to the Pacific Rim amounted to more than $500 million, roughly equivalent to one-third of Alberta's total petrochemical exports.

In 1989, major capacity expansions in the United States and other petrochemical producing countries, combined with slower growth in demand, have led to a sharp decline in the price of ethylene derivatives and methanol since the second half of 1989. As a result of the build-up of petrochemical inventories in the Pacific Rim region, the value of Alberta's exports of polyethylene and styrene, to countries such as China, Korea and Taiwan, declined significantly in 1989.

With the build-up of excess capacity, and the decline in petrochemical prices, the value of Alberta petrochemical shipments in 1989 declined by about 3% to $3 billion, while the value of exports declined by 12% to $1.6 billion.

In 1990, excess world inventories of petrochemicals are expected to be gradually reduced, resulting in slightly higher export volumes for Alberta producers. However, with the continued overall surplus world capacity, and with the slowdown in world economic growth, petrochemical prices are projected to decline by a further 10% to 12% in 1990, resulting in a further decline in the overall value of chemical and chemical product shipments.

Factors Affecting Future Development and Growth

Structural Factors

The petrochemical industry was established in Alberta primarily because of the abundant availability of attractively priced feedstock. Since the mid-1970s, more than $6 billion has been invested in Alberta in the development of modern, world-scale plants capable of producing a range of petrochemicals and related fertilizers. The future development and growth of the industry will continue to depend on such factors as feedstock availability and price, relative production costs, transportation costs to markets, exchange rates, and tariff and non-tariff barriers to trade.

The deregulation of the natural gas industry and the ethane feedstock pricing mechanism should ensure that ethane prices will be market responsive and competitive with feedstock prices on the United States Gulf Coast. Furthermore, the Alberta Government's ethane policy will maintain a functioning market in ethane wherein both the petroleum (ethane used for enhanced oil recovery) and petrochemical industries will have access to competitive sources of ethane supply. This should provide the incentive for further development of ethane-related activity in the province.

The overseas markets, especially in the Pacific Rim region, will continue to represent the area of highest potential growth for the Alberta petrochemical exports. However, the increasing petrochemical capacity being developed in those markets will continue to pose a growing challenge to the Alberta petrochemical industry's marketing efforts in the region.

In the years to come, the growing concerns about the environment and the increasing emphasis on plastics recycling, are likely to influence the demand in the plastics and petrochemicals industries. This will result in the need for more flexibility in the technology of production and marketing strategies of the petrochemical industry.

Canada/United States Free Trade Agreement

The Canada/United States Free Trade Agreement (FTA), which entered into force on January 1, 1989, is also expected to have a significant impact on the future development prospects for Alberta's petrochemical

industry. Alberta petrochemical producers have been among the more vocal proponents of the FTA, which calls for both countries to eliminate all remaining bilateral tariffs on chemicals and chemical products by January 1, 1993.

The elimination of United States tariffs on methanol (18%), linear low density polyethylene (12.5%), ethylene glycol (12%), styrene (7.4%), polyvinyl chloride (10.1%), and vinyl chloride monomer (5.3%) have been identified as having the greatest potential to benefit the Alberta industry. The phased elimination of other United States tariffs should enable Alberta producers to become even more competitive in United States markets. Most industry analysts agree that the FTA should improve the climate for capacity additions and investment in new plants in Alberta's natural gas-based industry.

Canada/United States trade in nitrogen-based fertilizers is already duty free. Therefore, the FTA is not expected to have any significant impact on Alberta's fertilizer industry.

The elimination of tariffs will also present some new opportunities for Alberta's inorganic chemical producers. Still, with over 75% of inorganic chemical production (based on dollar value) already trading free of tariffs, the elimination of the remaining duties is not expected to have any significant impact on the majority of Alberta producers.

Mid-Term Investment and Growth Prospects

The future performance of the Alberta petrochemical industry will continue to be highly sensitive to the fluctuations in global supply/demand balances. However, the industry's growing world market shares and high degree of competitiveness of its products have created a strong potential for future stable growth.

Despite the current downturn in petrochemical prices, a new round of plant investment (valued at nearly $2 billion) is planned in Alberta over the next three to four years. Construction is scheduled to begin on Dow's $800 million ethylene plant and hydrocarbons project in Fort Saskatchewan. Related downstream derivative production facilities include the $425 million ethylene glycol plant proposed by Union Carbide.

Petro-Canada Inc. and Neste Oy have begun construction of a $300 million methyl tertiary butyl ether (MTBE) plant in Strathcona County near Edmonton. This project will use Alberta field butane and methanol as feedstock to produce 530,000 tonnes of MTBE annually. The product will be marketed in Western Canada and the West Coast of the United States.

Several new projects will also come on stream in the area of industrial inorganic chemicals produced for the pulp and paper industry. Construction has begun on Dupont Canada's $120 million hydrogen peroxide plant at Gibbons, plus three sodium chlorate plants, valued at more than $150 million — Canadian Occidential Petroleum Ltd. ($60 million plant near Bruderheim); Albchem Industries ($45 million plant at Bruderheim); and Albright & Wilson Americas ($50 million plant near Grande Prairie). At least two additional plants are expected to be built in the near future to satisfy the demand created by the new Alberta pulp mills.

Alberta's Forest Products Industry

Alberta's Forest Products Industry

Industry Profile

The forest industry continues to grow into one of Alberta's leading industries in terms of employment, value of shipments and capital investment. It is estimated that approximately 13,500 people are directly employed in the forest products industry and annual shipments exceeded $1.7 billion in 1989.

Alberta's forest products industry is comprised of four major segments:

- sawmills (dimensional lumber and boards);
- panel products (plywood, oriented strandboard, medium density fibreboard);
- pulp and paper mills; and
- value added wood products (doors, windows, sashes, cabinets, trusses, treated wood products).

Sawmills

In Alberta, there are about twenty-five sawmills (with annual capacity over ten million board feet) plus over 200 smaller mills. The major mills account for 90% of the lumber production.

In 1989, total lumber production amounted to approximately 1.6 billion board feet, with an estimated value of $350 million. About 60% of Alberta's lumber production is exported, mostly to the United States, but inroads are being made into markets such as Japan and Western Europe.

Panel Products

Alberta produces four major panel products: plywood, oriented strandboard, medium density fibreboard, and insulation board. The major market for panel products is residential construction, remodelling and repairs.

Oriented strandboard (OSB), a composite structural board, is the most important component of the panelboard sector. More than half of Alberta's strandboard and fibreboard production is exported to the United States, while plywood and other panel products are sold primarily in Alberta and the Western Canadian market.

Pulp and Paper

Alberta now has five pulp mills in operation, three of which are bleached kraft mills and the remaining two are chemi-thermo-mechanical pulp mills (CTMP). The most recent start-ups are the Daishowa bleached kraft pulp mill at Peace River which started in July 1990, and the Alberta newsprint CTMP mill which started in August 1990. Edmontonians saw the first newsprint from the latter mill in local newspapers in late August of this year.

The value of pulp production in 1990 will be about $700 million with an estimated increase to $874 million in 1991. Most of this production is exported to the United States.

Value-Added Wood Products

This segment of the industry consists of firms involved in the remanufacturing of lumber and wood into a range of semi-finished and finished products. These include: trusses, doors, windows, sashes, moldings and other millworks, treated wood products, cabinets, wood furniture, and other related wood products.

Most of the Alberta firms are relatively small scale and are geared to serving the local and Western Canadian market. Demand for most wood products is closely tied to the new residential construction and remodelling market.

Current Economic Indicators

Forest Products Industry*

	1987	1988	1989	1990 (Estimate)
Employment[1]	12,000	12,300	12,800	13,500
Value of Shipments[2] ($ Million)	1,430	1,609	1,738	2,050
Exports[3] ($ Million)	655	704	730	985
Investment[4] ($ Million)	236	625	840	n/a
Capacity Utilization[5] (Percent)	90	95	95	95

* Includes paper and allied products, and wood products as defined by Statistics Canada. Does not include furniture and fixtures.
1. Source: Statistics Canada; Forestry, Lands & Wildlife Estimate and Forecast
2. Source: Statistics Canada; Forestry, Lands & Wildlife Estimate and Forecast
3. Source: Forestry, Lands & Wildlife
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

The Alberta forest products industry is highly export oriented. In 1989, the value of Alberta forest product exports amounted to roughly $730 million. The largest exports were wood pulp ($450 million) and lumber ($210 million). Although the United States remains the industry's main export market, exports to other regions, mainly the Pacific Rim, have risen significantly in recent years.

In 1990, the value of exports of forest products is expected to amount to roughly $1 billion. This large

increase over 1989 is due primarily to increased shipments of pulp from the expanded pulp mill capacity.

Lumber production in Alberta is expected to increase from 1.6 billion board feet in 1989 to 1.7 billion board feet in 1990. However, lumber prices are marginally lower, a result of the further slowdown in the housing starts in the United States and Canada. Offshore demand remained strong for a good part of 1989.

The 15% tariff on softwood lumber exports to the United States has had an impact on the profitability of the sawmills which ship lumber to the United States market. As a result, some producers are shifting their focus to more lucrative offshore markets in Japan and Western Europe.

Market pulp prices peaked in mid-1989. Since then there has been downward pressure on pulp prices as new world capacity comes on-stream. Despite lower prices, the value of Alberta pulp shipments will increase substantially over the next two to three years, due to additional new pulp capacity.

The markets for veneer, non-veneer panels and value added products are affected by the North American housing starts, as is the dimension lumber market. With the slowdown in the North American housing markets, demand is softening for plywood and oriented strandboard in 1990.

Factors Affecting Future Growth and Development

The availability of low cost timber resource in Alberta, combined with the province's diversification efforts, have led to significant new commercial developments in the forest products industry. Total capital investment in new projects recently completed, under construction or planned, amounts to about $3.5 billion. Most of this investment is committed to the development of pulp and paper facilities in northern Alberta.

The growth and development of new markets in the Pacific Rim and Europe will help expand and diversify the demand for Alberta forest products.

The rise in value of the Canadian dollar over the past year or so has had an adverse impact on export revenue and also made it much tougher to compete in the United States market. This is particularly true for lumber and panel products where prices have not risen as rapidly compared to pulp and paper products.

The Canadian lumber industry feels that the FTA will provide a better environment to negotiate some of the trade problems with the United States, such as the 15% export tax imposed on Canadian lumber sales.

In the future, environmental concerns will continue to have a major impact on the forest products industry. In the pulp and paper segment, the emphasis will continue to focus on developing state-of-the-art facilities, applying top standards of pollution control.

Mid-Term Investment and Growth Prospects

Alberta sawmills will benefit from strong offshore markets, particularly in the Pacific Rim and Western Europe, which will help broaden international markets for Alberta lumber. The offshore market is a relatively new market for Alberta lumber producers, and has the potential for significant growth over the next few years.

Oriented strandboard will continue to make inroads into the plywood market because of its price advantage. However, dramatic increases in OSB prices are not anticipated, given substantial new capacity is slated to start up in North America over the next two years.

In addition to the pulp mills which have recently come on-stream, a CTMP mill being built by the Alberta Energy Company at Slave Lake is expected to start operations in December 1990 or early 1991. These additions to the pulp industry will add significantly to Alberta's pulp production and exports. Proposals are also being put forth for other pulp projects which may be considered in the future provided they meet stringent provincial environmental standards.

Roughly 10,000 man years of construction jobs, and more than 4,000 permanent operating jobs will be created by the major forestry developments recently completed, under construction or planned in Alberta.

Once in place and fully operational, these projects will make Alberta's forest products industry one of the largest manufacturing industries in the province.

Alberta's Refined Petroleum Products Industry

Alberta's Refined Petroleum Products Industry

Industry Profile

The refined petroleum products industry in Alberta consists of six refineries, with a throughput capacity of just under 400,000 barrels per day. Two refineries, Esso Petroleum and Petro Canada, both located in Edmonton, account for almost three-quarters of Alberta's total capacity.

Alberta refineries, which supply most of the Western Canadian market (particularly the Prairie Region), make up about 23% of the total refining capacity in Canada.

The refined petroleum product industry is characterized as a highly capital intensive, and relatively low value added manufacturing industry. It is also a mature industry that has been faced with a stagnant or declining market for much of the past decade.

Substantial rationalization has occurred in the industry with a total of ten refineries shut-down across Canada since 1980 — two of which were located in Alberta — Gulf Canada (December 1983) and Texaco Canada (June 1984). The Shell Scotford refinery, near Fort Saskatchewan, is the only major new refinery to come on stream in Canada over the past six years.

Most of the Alberta refined petroleum product output is consumed locally and in the other Western Provinces. In 1989, the value of petroleum product shipments amounted to about $3 billion. Exports to the United States amounted to about $100 million, less than 4% of total shipments.

About 80% of Western Canadian refined petroleum product demand is for transportation fuels (motor gasoline, diesel fuel, aviation fuel). The use of light and heavy fuel oils in heating has declined in recent years, and now accounts for less than 5% of total refined product demand. By comparison, Eastern Canada still has significant demand for fuel oils — over 10% in Ontario and about 27% in Quebec and Atlantic Canada.

The balance of refined petroleum production in Alberta includes asphalt, refined propane, and butane, petrochemical feedstocks, kerosene, lubricants, and other miscellaneous products.

Current Economic Indicators

Refined Petroleum Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	3,000	3,000	3,000	3,000
Value of Shipments[2] ($ Million)	3,394	2,939	3,029	3,140
Exports[3] ($ Million)	142	104	101	100
Investment[4] ($ Million)	117	146	240	n/a
Capacity Utilization[5] (Percent)	86	87	88	88

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

Between 1980 and 1985, refined petroleum product demand in Western Canada declined by about 15%. Despite this decline, Alberta refineries managed to increase the output by capturing a larger share of the Western Canadian market.

Since 1986, there has been an upturn in Western Canadian consumption, primarily due to lower product prices and improved economic performance. This has resulted in increased capacity utilization rates for most Alberta refineries.

In 1989, as a result of the continued economic growth in most regions, the demand for refined petroleum products such as motor gasoline, diesel gasoline, light fuel oil, kerosene and light fuel oil across Canada increased by about 3% to 4%, while the demand for heavy fuel oil rose by about 27%.

For 1990, the demand for refined petroleum products is expected to level off or even decline due to higher crude oil prices. Depending on the outcome of the Iraqi crisis, demand for transportation fuels may fall sharply in the latter part of 1990 and through 1991 because of the rise in crude oil prices.

The value of industry shipments is directly related to crude oil prices which account for a major share of the input costs for refineries. Despite gains in Alberta refinery production since 1986, the value of product shipments has dropped significantly due to lower crude oil input costs. In 1989, value of shipments was estimated at about $3 billion (an increase of 3% over 1988)

compared to $5.1 billion in 1985, the peak year in terms of value of shipments.

Alberta Refinery Capacities – 1988[1]

Refinery	Location	Crude b/cd	Capacity M^3/cd
Esso Petroleum	Edmonton	164,875	26,200
Husky Oil	Lloydminster	23,315	3,705
Parkland Industries	Bowden	6,700	1,064
Petro Canada	Edmonton	121,140	19,250
Shell Canada	Scotford	56,000	8,900
Turbo Resources	Calgary	27,625	4,390
Total		**399,665**	**63,509**

b/cd - barrels per calendar day
M^3/cd - cubic meters per calendar day
1. Source: Oilweek

Factors Affecting Future Growth and Development

The key factors affecting the value of shipments and profits of this industry are the general economic climate, and the level of demand for motor gasoline and other major products, as well as the crude oil prices which affect the refiners' input costs.

The refined petroleum products industry will likely continue to face the increasing motor gasoline efficiency and possibly growing competition from the alternative sources of energy. Growth in demand for transportation fuels is expected to remain relatively flat over the next few years as automotive and truck fleet fuel efficiency continues to improve.

The deadline for the removal of lead from gasoline (recently moved up by the Federal Government from January 1, 1993 to December 31, 1990), will result in investment in additional equipment to introduce non-lead methods of improving gasoline efficiency. The total cost of these investments for Alberta is estimated at $125 – $250 million.

Increased environmental awareness has recently put a number of gasoline octane enhancers (e.g., methanol blends) in the spotlight. However, potential regulations on their use could serve to increase production costs and prices. Other factors which may hinder the mass substitution of conventional for non- conventional refined fuels include the high cost of producing non-conventional refined fuels and the lack of technologies to effectively utilize such fuels.

The Free Trade Agreement will have little direct effect on trade of refined petroleum products as most products are currently free to move between the two countries.

Mid-Term Growth and Investment Prospects

Several plant and equipment modifications among Alberta refineries were undertaken in 1990 to expand the processing of gasoline to obtain higher octane product, without the use of lead.

No additional refinery capacity is expected to be built in Alberta over the next two to three years. An expansion in capacity in the 1990s will likely be in the form of expansions at existing plants to upgrade increasing supplies of heavy crude blends.

As a result of the recent crisis in the Middle East, the Western Texas Intermediate crude oil futures trading prices have risen above $30 (U.S.) a barrel. Although the prices are expected to decline somewhat over the longer term, they are likely to remain considerably higher than in 1989. This, in turn, will lead to higher petroleum product prices and reduced demand, particularly for transportation fuels in the latter part of 1990 and through 1991.

Alberta's Non-Metallic Mineral Products Industry

Alberta's Non-Metallic Mineral Products Industry

Industry Profile

The non-metallic mineral producers in Alberta manufacture products used primarily in the construction industry, such as: cement, ready-mix concrete and concrete products, gypsum products, lime, fibre insulation, and clay products.

In 1989, the value of shipments in the industry amounted to about $546 million and estimated employment was approximately 3,600. Output in the industry is closely tied to new investment and construction activity in Alberta and Western Canada.

Weight, bulkiness, and low value relative to transportation costs make exporting non-metallic mineral products difficult. As a result, most of production is used by the construction industry in Alberta and in parts of Western Canada.

Of the approximate 150 non-metallic minerals firms in Alberta, most are involved in the manufacture of cement and cement products (mainly ready-mix concrete and a variety of precast products).

The balance of the industry consists mainly of the manufacturers of gypsum products, ceramic clay products, (e.g., brick, ceramic sewer pipe, chimney inlay materials), fibre insulation, and lime production.

Cement, Ready-Mix Concrete, and Concrete Products

The value of cement and ready-mix concrete production comprises about 50% of the total value of the industry's shipments.

The two major cement producers in Alberta — Canada Cement Lafarge and Inland Cement — have a combined capacity of about 1.98 million tons, enough to supply Alberta as well as parts of the Western Canadian construction market. There is a significant level of vertical integration in this segment of the industry, as these firms also own a number of concrete product manufacturers in Alberta.

Cement from the major producers in Alberta is primarily used in the production of ready-mix concrete and a wide range of precast concrete products such as building blocks, pipes, steps, curbs, road dividers, and manholes. Over eighty plants in Alberta supply ready-mix concrete to construction sites, while more than thirty plants manufacture precast concrete products.

Gypsum Products

In 1989, the volume of Alberta gypsum products manufacturing amounted to an estimated $60 million or 11% of the total value of shipments in the non- metallic products industry.

Gypsum drywall, one of the main elements of home construction, produced by several relatively small scale plants, comprises the bulk of gypsum products manufactured in Alberta. The remaining gypsum products include a variety of wallboards used as office partitions, in mobile home and recreational vehicles construction, and in cabinet making.

Another use of gypsum is in mixtures with cement and stone for stucco and other types of exterior wall finishes production.

The demand for gypsum products is closely tied to the housing construction and commercial office market.

Ceramic Clay Products

Ceramic clay products manufactured in Alberta include building and facing brick, ceramic sewer pipe and chimney inlay materials.

The annual production of bricks is closely tied to the number of housing starts, both in Alberta and throughout Canada, as large amounts of bricks are sold in other provinces.

In 1989, the value of Alberta brick and ceramic clay production amounted to approximately $10 million.

There is a small number of small-scale ceramic clay producers in Alberta producing ceramic pottery and a variety of decorative ceramic materials.

Fibre Insulation

Alberta has two major producers of fibre insulation used in residential, as well as industrial and commercial construction throughout Alberta and in parts of Western Canada.

Alberta also has one producer of cellulose fibre insulation used mainly as fire proofing thermal and acoustical and other types of insulation in non-residential construction. A proportion of the cellulose fibre insulation produced in Alberta is sold outside the province.

Lime Production

The processing of limestone into quicklime (lime proper) and lime derivatives takes place in two locations: Exshaw (Continental Lime Ltd.) and Coleman (Summit Limeworks Ltd.).

Quicklime, obtained by heating of the limestone over sufficient time to release carbon dioxide, is used prima-

rily as a flux agent in steel production and in pulp and paper industry. Several lime derivatives are also used in the production of uranium, fertilizers, insecticides, pigments, glue, and other products.

A significant proportion of lime and lime derivatives is exported, mainly to the United States.

Current Economic Indicators

Non-Metallic Mineral Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	4,100	4,000	3,600	4,000
Value of Shipments[2] ($ Million)	603	583	546	600
Exports[3] ($ Million)	26	28	32	35
Investment[4] ($ Million)	48	68	55	53
Capacity Utilization[5] (Percent)	65	60	60	65

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

The Alberta non-metallic minerals industry is directly linked to the level of construction activity and indirectly to the oil and gas sector (which stimulates construction). Between the end of 1981 and 1984, a drop in construction activity, by about 35%, resulted in oversupply and low capacity utilization for most segments within the industry.

During the 1985 – 1988 period, the industry's shipments increased by about 11% from $514 million to an estimated $571 million, in response to a moderate recovery in investment and construction activity in Alberta.

In 1989, mainly as a result of reduced activity in the Alberta oil and gas sector, the value of the industry's shipments declined by over 6% to $546 million. Shipments of brick and ceramic clay products to other provinces, particularly Ontario, also declined due to a slowdown in the construction industry in those provinces.

Shipments of non-metallic products rose in the first half of 1990, and are expected to increase by 10% for the year as a whole, due to strong growth in residential construction.

Factors Affecting Future Growth and Development

With more than $24 billion worth of major industrial projects, either under construction or planned in Alberta, investment and construction activity is expected to continue to be at a higher level over the next few years compared to the mid-1980s. The development of these projects will in turn create a stronger demand for Alberta's non-metallic mineral products.

Also, with the strong recovery of the Alberta economy over the past two years, much of the over-capacity has been absorbed in the housing and commercial/ office market. This will continue to result in further increases in building construction activity over the next few years.

Due to the nature of the products in the non-metallic minerals industry, the overall impact of the Free Trade Agreement (FTA) on the industry is not likely to be significant. However, the FTA has resulted in several positive developments for the industry. It will eliminate tariffs on most products in the non-metallic industry over the period of five years, except for the tariffs on gypsum wallboard and fibreglass, which will be phased out over a ten year period. In addition, the FTA significantly lowered the threshold level for the United States government purchases above which the contracts are opened for bidding. This may result in greater opportunities for Alberta cement and cement product manufacturers to bid on road projects in adjacent states.

Mid-Term Investment Opportunities

Construction activity in Alberta is expected to remain relatively strong over the next two to three years.

Industrial and engineering construction is expected to remain strong with the ongoing construction of major projects in forestry and petrochemical industries. As a result, the cement and concrete segments of the industry should experience much higher capacity utilization rates.

Overall, over-capacity continues to be a problem in this industry, and therefore, little new investment activity is expected to take place over the next two to three years.

Alberta's Electronic Products Industry

Alberta's Electronic Products Industry

Industry Profile

The Alberta electronics industry is composed of approximately 120 – 130 companies engaged in manufacturing the following products:

- telecommunications equipment and components;
- instruments and process control products;
- electronic equipment and components; and
- computing equipment.

In 1989, the industry had estimated shipments of $850 million and employed approximately 6,000 people. The majority of companies in Alberta are small with less than thirty employees, and revenues of less than $1 million.

In 1989, roughly 29% of the industry shipments were exported, mostly to markets in the United States, and the total value of exports rose by 65% to $245 million. The major exports in the electronics industry are comprised of telecommunications equipment such as telephone apparatus equipment and parts.

The industry in Alberta is recognized for its strengths in telecommunications equipment, oil and gasfield equipment electronics, office automation equipment, supervisory control, data acquisition systems, and thermoelectric power generators. The electronics industry serves most other industries by supplying products and services which increase effectiveness and efficiency. This is particularly true in the oil and gas industry, telecommunications, agriculture, and computer services.

The **telecommunications** equipment industry is Alberta's largest high-tech manufacturing segment. This industry alone represents almost 60% of the total sales of electronic products in Alberta.

Firms in the telecommunications industry are engaged in the manufacturing and sales of cellular telephone operating systems and telephone systems accessories; data distribution and interface equipment, radio and satellite tracking and receiving devices; switching equipment; and synthetic apparature radar (SAR) equipment.

The telecommunications equipment industry in Alberta is dominated by two firms — NovAtel which is based in Alberta (50% owned by AGT) and Northern Telecom, a subsidiary of Bell Canada. The companies are not only known to be on the leading edge of telecommunications technology in Canada, but also have gained international recognition and markets.

The **test/measurement/control** segment of the electronics industry produces products such as oilfield monitors, meters, detectors, gauges, control panels, pollution control devices, and various geophysical products. Production in this segment is largely dependent on activity in the energy sector, and therefore downturns in this sector have had an adverse impact on this segment of the industry. However, as these firms mature, their product offerings have been diversified to include scientific and laboratory equipment, as well as various safety and security devices.

The **factory and process automation** segment of the industry, which includes products such as flow meters, vibration and temperature sensors, and pressure gauges is the fastest growing area of activity and expertise in the electronics field. The design and production of Supervisory Control and Data Acquisitions (SCADA) systems have led Alberta firms to be world leaders in terms of technological development and applications. This industry has shown a substantial degree of diversification away from its early roots in the oil patch. It is now making significant inroads into power, utility, water management, transportation, and telecommunication applications and is less vulnerable to fluctuations in the energy industry.

There is also a growing number of manufacturers involved in the production of **electronic transportation equipment**. Products in this sector include traffic control equipment and signalling and simulation equipment. One area that Alberta is particularly strong in is the production of electronic distance measuring equipment, with one company in the forefront in developing Microwave Landing Systems (MLS).

Current Economic Indicators

Electronic Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	4,400	4,600	6,000	7,000
Value of Shipments[2] ($ Million)	620	700	850	1.010
Exports[3] ($ Million)	99	149	245	350
Investment[4] ($ Million)	-	-	-	-
Capacity Utilization[5] (Percent)	75	75	85	85

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Survey and Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

In recent years, the electronics industry has become one of the fastest growing manufacturing industries in Alberta. In 1989, the value of electronics shipments rose by 21% to $850 Million.

The Alberta electronics manufacturers have also been rapidly expanding their foreign market shares. In 1989, the total value of exports increased by a record 65% to $245 million.

The Electronics Industry Association of Alberta lists an increasing number of corporate enterprises in the industry, ranging from local research facilities to multinationals. The pattern over the last ten years indicates that approximately fifteen new electronics related companies are established in Alberta every two years.

Alberta electronics companies have been gaining wide recognition for their innovative products. According to a survey done by the Electronics Industry Association, close to a third of Alberta's electronic industry experienced growth in sales in excess of 25%. This high growth has been largely generated from new product commercialization, as well as increased sales of existing products.

Factors Affecting Future Growth and Development

Technological advancement is a constant in the electronics industry and product life cycles are relatively short. This decreases the emphasis on large scale manufacturing and raises the emphasis on flexible manufacturing which allows the adoption and integration of new technologies without significant rehauling of the manufacturing process.

There will be an increased focus on the business side of the industry as certain technologies mature and become standardized and widespread. The focus of a competitive advantage is shifting towards a firm's ability to market and provide support service for products, arrange financing, and generally manage business activities. The business aspect is particularly important, given the technological developments taking place in other countries such as Japan, West Germany, and the United States.

Traditional product lines and geographic market segments in the telecommunications sector are becoming less defined as vendors are increasingly competing for lucrative contracts to install and service global business networks.

The Electronics Industry Association has identified a number of issues/problems currently of concern to the electronics industry. These include: inconsistent and unreliable supplies of local parts and components; inability to raise risk capital procurement in Alberta without surrendering reasonable managerial control and ownership; and a low-level of manufacturing support.

The Alberta Government has put in place a substantive R&D infrastructure support to assist industry in research and development, and the commercialization of new products.

With the signing of the Free Trade Agreement between Canada and the United States, export oriented firms are expected to benefit by way of economies of scale with resultant lower production costs and enhanced technology exchange. In addition, the opening of some United States government procurement contacts, under the Free Trade Agreement, may enhance the development of Alberta's high technology product industry.

Other benefits from the Free Trade Agreement will come through the ability to secure existing access to United States electronic markets. As a whole, Alberta's electronics industry is notable for its flexibility and resourcefulness, and developing innovative products and processes to respond to emerging opportunities in the field of electronics.

Mid-Term Investment Prospects

The Alberta electronics industry, with its highly competitive telecommunications sector, is expected to continue to be one of the fastest growing and most dynamic industries in the Alberta manufacturing sector.

In the **telecommunications** industry, Northern Telecom and NovAtel, Alberta's two largest manufacturers are well positioned to continue to expand export sales in what is the largest and most competitive of all advanced technology markets.

With the signing of the FTA, Northern Telecom is confident in their ability to continue to make significant inroads with the Norstar line in North America, where there are approximately seventy key systems suppliers already in the market. NovAtel is also confident in increasing their current share of the United States market with a new series of cellular telephones. In addition, as the recent Northern Telecom sales contract with a Korean company signifies, the Alberta telecommunications industry is increasingly gaining recognition in the highly competitive telecommunications markets outside the United States.

Another development that will further enhance Alberta's telecommunications industry is the recent announcement by Computing Devices Company (CDC) to establish a new manufacturing plant in Calgary. CDC was awarded a National Defence contract to develop the Tactical

Command Control and Communications System which will bring an estimated $500 million in direct spending to Alberta and will also benefit other existing Alberta firms, including: Frontec Logistics, ACTC Technologies, and AMTEK Testware.

Given the increasing demand for electronic products and other advanced technology products, the electronics industry offers growth opportunities for companies involved in the development and marketing of innovative products in all areas of the industry. Industry segments that have been identified as having strong growth potential in Alberta include manufacturers of integrated circuits and semi-conductors, agricultural communication, cellular radios, and medical products such as digital heart rate monitors, alarm units, and ultra-sonic stethoscopes.

Alberta's Plastic Products Industry

Alberta's Plastic Products Industry

Industry Profile

The plastic products industry consists of firms using synthetic resins to mold, extrude or fabricate basic plastic products such as foamed and expanded shapes and forms, plastic pipe fittings, film sheeting and plastic bags, bottles, and containers.

The total value of plastic products shipments amounted to $325 million in 1989, of which just over 10% ($28 million) consisted of exports, mainly to the U.S.

The Alberta plastics industry, like the Canadian industry, is characterized by a relatively large number of small scale operations producing a wide variety of products. Currently, there are approximately 100 plastic firms conducting business in Alberta employing over 4,000 people. The average establishment employs approximately twenty people and has annual sales under $3 million.

The three principal markets for plastics in Canada are the packaging, construction, and automotive industries.

The main markets for Alberta plastics manufacturers are located in Western Canada, and to a lesser extent in Washington, Oregon, Idaho, Montana, and North Dakota.

It should be noted that the statistics on value of shipments for this sector do not include consumer products with plastic parts or components (e.g., furniture and finishings, housewares, toys and leisure products). There are also numerous establishments not included in the plastics manufacturing industry producing custom and other fabricated products such as thermoformed signs.

Current Economic Indicators

Plastic Products Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	3,500	4,000	4,200	4,500
Value of Shipments[2] ($ Million)	271	295	325	375
Exports[3] ($ Million)	18	27	28	30
Investment[4] ($ Million)	13	23	20	n/a
Capacity Utilization[5] (Percent)	85	85	87	90

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Survey and Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

The plastic products industry has been growing more rapidly than the manufacturing sector as a whole in Alberta. New investment activity in the plastic processing industry in recent years has resulted in a much larger and more diverse range of plastic products manufactured in the Province.

Shipments by plastic processors in Alberta increased by approximately 10% in 1989. Much of this growth can be attributed to the strong growth in the construction industry, increased consumer demand, and the growing market share captured by plastic packaging materials and other plastic products. Major inroads have been made by Alberta producers in capturing a larger share of the packaging materials market.

Virtually all segments of the plastics industry have performed very well in the last two to three years and are operating at or near capacity.

Investments have been made to manufacture a variety of plastic materials which were not previously produced in Alberta. These include:

- expanded polystyrene insulation;
- polyethylene geomembranes and geotextiles;
- polyethylene terephthalate (PET) soft drink bottles;
- woven polypropylene bags; and
- recycled PET and polyethylene products.

The plastic pipe and packaging outlets are among the growth leaders in the plastics industry with several major new project developments/expansions recently completed or planned in Alberta.

The establishment of a number of plastics recycling plants is a more recent development in Alberta's plastics industry. These plants reprocess industrial plastic scrap and/or post-consumer plastic waste for re-use by plastics manufacturers, and have helped to lower the input costs of some plastics manufacturers.

In the last few years, the use of increasingly more sophisticated manufacturing technologies has led to increased efficiency and productivity in the industry. In Alberta, this has facilitated recent plastics plant expansions despite the pressures of increasing manufacturing costs.

Factors Affecting Development and Growth

In the future, the increasing emphasis on plastics recycling and the need for more environmentally friendly products, will have a major impact on the demand in the plastics industry. The competitiveness in the industry will require a high degree of innovation in designing materials which are considered environmentally more acceptable.

The performance of various segments of the plastics industry will continue to greatly depend on activity in principal markets such as the construction sector, packaging industry, and increasingly in the electronics industry. New product development and substitution of plastics for other materials, in these and other industries, will continue to generate much of the short term growth in the plastics industry.

Potential for industry growth, over the long term, lies in the development of a more broadly based plastics industry. Currently Alberta manufacturers are focussed on end-user products and the area of "intermediate plastic processing" is relatively undeveloped. For example, locally produced upstream products such as styrene are currently shipped out of the province to be processed into higher value products such as polystyrene. With the progress taking place in processing technology and the competitive supply of resins in Alberta, new opportunities for intermediate resin production will continue to emerge.

The electronics industry offers a growing source of potential for the plastics industry as new products are continually being designed which use plastic for component parts.

New products and improved plastic materials are continually being developed for commercial use. The rate at which plastic products are being used as a substitute for metal, glass, paper, and other materials in existing items increases yearly. Examples of such products include plastic grocery bags, plastic bottles, other plastic containers such as pails and oil drums, and component parts for electronic products.

Alberta plastics manufacturers tend to be disadvantaged by small local markets and long distances to major markets. This has limited local manufacturers to producing and shipping dense plastic products that can be shipped economically. Alberta plastics manufacturers do, however, have the advantages of a stable local market and the availability of locally produced upstream resins such as polyethylene and polyvinyl chloride.

The Free Trade Agreement will eliminate all tariffs on goods flowing between Canada and the United States over a ten year period. Prior to the Agreement, United States tariffs on plastic products were in the range of 3% – 6%, while Canadian tariffs generally ranged from 8% – 13.5%. This may negatively impact some plastic manufacturers. However, given that the adjustment period extends over ten years for most tariffs, there is ample time for planning and adjustments to take place in Alberta's plastics industry.

Mid-Term Growth and Investment Opportunities

The annual real growth rate of plastics processing in Canada has been averaging 2.7 times Canadian real Gross National Product (GNP) growth for the last decade. The factors that have contributed to this strong growth include energy efficiency, processability, light weight products, and resistance to corrosion. The Society of the Plastics Industry of Canada has projected that this rate of growth will continue for the foreseeable future.

With the continuing emphasis on developing new product lines, the plastics industry in Alberta is expected to continue to grow rapidly in the near future. Examples of new projects planned for the next two to three years include additional recycling facilities in the area of post-consumer products, manufacturing of plastic soft drink bottles, and several proposed projects in the area of plastic parts manufacturing for a variety of industries such as electronics, oil and gasfield equipment, and construction.

Alberta's Printing and Publishing Industry

Alberta's Printing and Publishing Industry

Industry Profile

The Alberta printing and publishing industry is highly labour intensive, employing some 13,000 workers in 1989, which represents about 13% of Alberta's total manufacturing workforce (second largest source of employment in the manufacturing sector). The process of printing, for example, involves a large variety of such tasks as typesetting, binding, film separating, and others.

In 1989, the value of the industry's shipments amounted to $755 million, which represents about 4% of total manufacturing shipments.

While classified as a manufacturing industry, the printing and publishing industry with its direct, customized local service, is in many respects more comparable to a business service industry.

The Alberta industry consists of three major segments: integrated companies, commercial printers, and publishing firms.

Integrated Companies

This segment comprises almost 50% of the industry's shipments, and includes mainly newspaper and magazine publishers which print and publish in-house. The newspaper and magazine industry is highly dependent on the performance of retail trade and personal service industries which account for the majority of advertising revenues.

Commercial Printing

The estimated 240 commercial printers which represent the largest segment of the publishing and printing industry in terms of number of firms, provide a wide range of products and services.

The smaller commercial printers generally produce custom-made printed materials required by most businesses, including a large variety of advertising materials such as flyers, brochures, catalogues, as well as business cards, price lists, and stationery.

The larger printing firms in Alberta tend to concentrate on specific products such as books, magazines, annual reports, directories, calendars, and a variety of advertising materials. Production in this segment of the industry generally involves more sophisticated quality standards and equipment.

Currently the main market for the Alberta printing industry lies within the province. However, Alberta printing prices are currently very competitive in North America, and a number of firms are beginning to attract more out of province orders.

Publishing

There are about thirty-five book publishing houses in Alberta, ranging in size from among the largest Canadian-owned firms in the country to small "cottage" operations. The Alberta companies produce the full spectrum of publications, from educational texts and support material, to general and specialty trade books, as well as scholarly, literary, and children's books. The value of the Alberta book industry's shipments in 1989 was estimated to be about $25 million.

The text, as well as the visual and other materials included in the manuscripts come from creators across the country and even internationally, although a significant amount of such material is created in Alberta. Alberta books are finding an increasingly national and international market, with growth evidenced particularly in the western United States.

Current Economic Indicators

Printing and Publishing Industry

	1987	1988	1989	1990 (Estimate)
Employment[1]	11,000	13,000	13,000	13,500
Value of Shipments[2] ($ Million)	642	709	755	800
Exports[3] ($ Million)	4	4	4	4
Investment[4] ($ Million)	14	18	34	n/a
Capacity Utilization[5] (Percent)	80	85	85	85

1. Source: Statistics Canada; Economic Development & Trade Forecast
2. Source: Statistics Canada, Estimated Value of Goods of Own Manufacture; Economic Development & Trade Forecast
3. Source: Statistics Canada, Commodity Exports; Economic Development & Trade Survey and Forecast
4. Source: Statistics Canada, Private and Public Investment
5. Source: Economic Development & Trade Estimate and Forecast

Recent Performance

The total value of shipments in the Alberta printing and publishing industry amounted to approximately $755 million in 1989. Sales and margins in the industry have been improving since 1986, and in 1988 and 1989, most firms registered significant growth.

Despite the improved performance of the industry, firms are still faced with excess capacity and a highly competitive market environment in Alberta.

The competition among the larger printing operations in Alberta has remained strong over the past two years, with some companies continuing to experience low margins.

Some firms, however, also undertook expansions in 1989.

In recent years, most Alberta book publishers have continued to show strong performance in their fields. While the total number of active publishers has stopped growing, the volume of business and the market territories of these publishers have greatly increased. Support programs, particularly those unique to Alberta, have been of significant assistance to book publishers. Many publishers report significant expansion, particularly with respect to exports to the United States as a percentage of total sales.

In the publishing sector, competition has increased in all areas, but by far the greatest pressure is coming from Canadian branch-plant operations in the trade and education sectors. These publishers enjoy both the strong backing of international patent publishers in the United Sates or the United Kingdom, and growing support from Canadian national publishing policies and programs.

Factors Affecting Future Growth and Development

The Alberta printing and publishing industry is now evolving into a more mature industry and is expected to expand its marketing efforts within and outside the Province. The educational and general trade houses, as well as the larger printing firms, are now in a position to capture a larger share of the national market. Considering the large demand for educational materials, the educational publishers are likely to continue to develop special market niches for these products.

The Free Trade Agreement should have a very small but positive impact on the printing and publishing industry in Alberta. The impact will tend to be small in comparison to other regions of Canada because of Alberta's distance from major United States markets, and the strong local character of the industry. The printing industry is based on direct, customized, local service. Integrated printers/publishers also have strong local focus and are largely exempt from the Agreement as a "cultural industry." The book publishing industry is also exempt from the agreement under the Cultural Clause.

Tariffs on paper products prior to the FTA averaged about 8.7% in Canada and 2.9% in the United States. Paper constitutes about 25% of total costs in commercial printing, and phasing-out of those tariffs is expected to have significant cost benefits to Canadian companies.

The proposed Goods and Services Tax (GST) could increase the printing and publishing industry's costs and is expected to have, at least initially, an adverse effect on demand.

Mid-Term Growth and Investment Prospects

The performance of the printing and publishing industry will continue to be highly responsive to the changes in the overall economic climate. The level of demand for advertising materials in the printing industry, and the size of government and private industry contracts in the publishing industry, will continue to have an impact on overall sales and profits. The substantial improvement in the expertise and reputation of the Alberta printers and publishers, will also help to attract a larger share of the market to Alberta firms.

Given that most businesses are placing greater emphasis on marketing and promotion of their products and services, demand for customized printing materials is expected to continue to expand for the foreseeable future, creating new opportunities for Alberta's printing industry.

Although Alberta's larger printing firms tend to specialize in different areas of printing, this sector is expected to remain price competitive.

Alberta's Consumer Products Industry

Alberta's Consumer Products Industry

Industry Profile

The Alberta consumer products sector consists of approximately 350 companies engaged in the manufacture of the following products:

- industrial uniforms, outerwear/skiwear, high fashion garments, other clothing niches, textiles;
- upholstered furniture, case goods, bedding/mattresses, office furniture (chairs, systems furniture, computer furniture, etc.), other household products;
- recreational vehicles, boats, other leisure products;
- sporting goods;
- wood products;
- stationery (book binders, envelopes, etc.);
- appliances; and
- jewellery, ceramics, etc.

The majority of companies have less than thirty employees, while others generally range from thirty to 150 employees. Total value of consumer products produced in Alberta in 1989 was estimated at $350 million, and approximately 6,000 – 7,000 workers are employed in this sector.

It is estimated that in 1989, about 9% of industry shipments were exported, principally by several large furniture and clothing manufacturers. The value of exports is expected to increase as new exporters have launched initiatives into the United States market. Major exports to the United States include office system furniture and skiwear products.

The largest category of the consumer products industry is the clothing sector with about $150 million in shipments and 3,000 workers. This sector has promise of further development and growth, particularly in contract sewing, high fashion exports, and mid to high-end specialty garment markets in Canada. The majority of firms are small and entrepreneurial, and take advantage of their Alberta location, servicing primarily local retailers and corporations. These companies tend to be versatile and capable of producing many styles from short runs.

The industry in Alberta is recognized as having the only group of specialized office furniture manufacturers in Western Canada. One of those firms, SMED Manufacturing, ships products throughout North America. The residential furniture manufacturers, together with patio and office furniture sectors, employ 2,000 workers and have $100 million in shipments. Growth opportunities have been identified in the United States, particularly in the West Coast regions.

Other sectors of the industry include a variety of manufacturers in recreational products, such as boats, personal watercraft products, all-terrain vehicles, etc. This is a relatively small sector with several larger companies making up the majority of the sales.

Current Economic Indicators

Consumer Products Industry[1]

	1987	1988	1989	1990 (Estimate)
Employment	6,000	6,300	6,500	7,000
Value of Shipments ($ Million)	300	330	350	380
Exports ($ Million)	20	29	31	35
Investment	n/a	n/a	n/a	n/a
Capacity Utilization (Percent)	n/a	n/a	n/a	n/a

1. Source: Estimates prepared by Alberta Economic Development & Trade based on industry contacts, Statistics Canada national data, and other secondary sources.

Recent Performance

Relatively strong growth in Alberta's retail sales in 1989 created a healthy market demand for most companies in the consumer products industry. Most of the furniture manufacturers experienced increases in sales volumes in 1989 over previous years and a number of companies are currently investing into new production technologies and new products.

In 1989, exports to other regions of Canada and the United States accounted for a significant part of the growth experienced by the companies. In the domestic market, Alberta companies are increasingly expanding their product range into the areas of products traditionally imported from abroad.

Factors Affecting Future Growth and Development

Most markets for consumer products in North America are relatively mature with the exception of the growing office furniture market in the United States, and the markets for new lines of products in sub-sectors such as microwave ovens and designer fashion items.

In the upcoming years, factors such as domestic manufacturing of previously imported products, growing exports to Western United States, and continued expan-

sion of niche markets such as specialized office furniture and specialty garment manufacturing, are expected to continue to expand Alberta's output of consumer products.

The principal disadvantage of some of the industry's newer firms is the lack of marketing expertise and limited working capital to sustain expanded marketing efforts.

Performance and Mid-Term Investment Opportunities

In 1990, the growth in retail sales in Alberta is expected to continue, but at a slower rate than in 1989. High interest rates have had a dampening effect on consumer expenditures.

In the upcoming years, the versatile entrepreneurial firms in such areas as fashion, sportswear, and specialty furniture are expected to continue to expand rapidly with the continued growth in demand for niche market products.

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